Grenada:
ICT Assessment

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CARANA CORPORATION

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Grenada: ICT Assessment

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Abbreviations and Acronyms

ACS	Association of Caribbean States
ADSL	Asymmetric Digital Subscriber Line
C&W	Cable and Wireless
CAGR	Compound Annual Growth Rate
CANA	Caribbean News Agency
CANTO	Caribbean Association of National Telecommunications Organizations
CARICOM	Caribbean Community and Common Market
CDB	Caribbean Development Bank
CET	Common External Tariffs (CARICOM)
CIMA	Central Information Management Agency (Government of Grenada/Prime Minister's Office)
CLAA	Caribbean Latin American Action
CRP	USAID Caribbean Regional Program
CXC	Caribbean Examination Council
DOC	U.S. Department of Commerce
DOT Force	Digital Opportunity Task Force
EC$	Eastern Caribbean Dollar
ECCB	Eastern Caribbean Central Bank
EC-ICT	Eastern Caribbean Information Communications Technology Initiative
ECLAC	United Nation's Economic Commission for Latin America and the Caribbean
ECTEL	Eastern Caribbean Telecommunications Regulatory Authority (Dominica, Grenada, St. Kitts/Nevis, St. Lucia, St.Vincent/Grenadines)
EDI	Electronic Data Interchange
EU	European Union
FATF	OECD Financial Action Task Force on Money Laundering
FDI	Foreign Direct Investment
FTAA	Free Trade Area of the Americas

G-8	The Group of Eight
GATT	General Agreement on Tariffs and Trade
GBN	Grenada Broadcasting Network
GCIC	Grenada Chamber of Industry and Commerce
GDB	Grenada Development Bank
GDP	Gross Domestic Product
GIDC	Grenada Industrial Development Corporation
GIFSA	Grenada International Financial Services Authority
GMNIB	Grenada Marketing & National Importing Board
GNP	Gross National Product
GPC	Grenada Postal Corporation
ICT	Information and Communication Technology
IDB	Inter-American Development Bank
ISP	Internet Service Provider
IT	Information Technology
ITU	International Telecommunications Union (UN)
kbps	Kilobits per second
Km	Kilometers
LAN	Local Area Network
mbps	Megabits per second
MHz	Mega (million) Hertz (cycles/second)
NGO	Non-Government Organization
NTRC	National Telecommunications Regulatory Commission
OECD	Organization for Economic Cooperation and Development
OECS	Organization of Eastern Caribbean States
PC	Personal Computer
PPP	Purchasing Power Parity
SEDU	Small Enterprise Development Unit (GDB)
SME	Small and Medium-Sized Enterprise
U.K.	United Kingdom
UNCTAD	United Nations Commission on Trade and Development
UNDP	United Nations Development Program

U.S.	United States
USAID	U.S. Agency for International Development
UWI	University of the West Indies
VSAT	Very Small Aperture Terminal
WAN	Wide Area Network
WB	World Bank
W.I.	West Indies
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

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Management Summary

This Information & Communication Technology (ICT) Assessment was undertaken by Carana Corporation in close coordination with, and in support of, the Organization for Eastern Caribbean States (OECS) and the Eastern Caribbean Telecommunications Regulatory Authority (ECTEL). This work was performed under contract with the U.S. Agency for International Development (USAID) as part of its Eastern Caribbean Information Communications Technology (EC-ICT) initiative.

This Report serves as Phase I of a two-phase effort being coordinated by OECS. Phase II of this effort is being launched in March of 2002 and is being carried out by GOPA (under contract with the World Bank). Whereas this first phase is aimed at compiling and assessing ICT-related information for input and recommendations, GOPA's activities are aimed at developing regional policies and strategies based on this, as well as other, input to their initiative. This Phase I will also put forward to USAID considerations for possible future development initiatives as part of their Caribbean Regional Program (CRP).

The ICT Assessment was built around four key areas: (1) ***Public Sector***—an examination of the Grenada Government's use of ICTs and its ICT policy and supporting legal/regulatory framework, (2) ***Pipes***—an examination of the current state of telecommunications infrastructure, (3) ***Private Sector***—an assessment of the current state of the ICT industry sector and the private sector's use of ICTs, with a focus on growth opportunities, and (4) ***People***—a review of the supporting educational systems within the country.

The ICT Assessment defines a number of key opportunities where targeted initiatives can be undertaken that would benefit Grenada in each of the four areas. In summary, these are:

- **Public Sector**—The Government of Grenada, through the Prime Minister's office, has completed a comprehensive national ICT strategic and tactical plan. This plan reflects a vision-to-action strategy for leveraging ICTs to propel Grenada's public, private, and social sectors toward a knowledge-based economy. Key near-term initiatives include improving the legal and regulatory framework to support online transactions and e-commerce, automating key internal Government functions to gain efficiencies in the public sector, and providing Governmental services over the Internet (e-government).
- **Pipes**—This area is already being addressed by market liberalization efforts underway via ECTEL and the National Telecommunications Regulatory Commission (NTRC). New licenses are currently being issued that will result in additional investments in the telecommunications sector, and, ultimately, will lower prices. Key initiatives put forward in this area of the ICT Assessment focus on ensuring that rural areas with lower density and lower income levels are not overlooked, but are provided Internet access via shared-access centers.

- **Private Sector**—The private sector's reliance on ICTs is hampered by high telecommunications costs. This issue will in part be addressed by the liberalization of the telecom market throughout the region. There is the need, however, to help small and medium-sized enterprises (SMEs) in Grenada reach out to the regional and international markets, and, here, ICTs hold significant promise. This will require providing internationally-oriented business development support, building a regional Caribbean product/service Web portal, and developing key upstream warehousing and distribution services in target markets.
- **People**—While the population of Grenada is quite literate (an estimated 95 percent), and PCs/Internet are now in all secondary schools, there has not been much of a focus in Grenada (or in the region) in building technical skills to support the growth of ICT usage in the public and private sectors. Although distance learning has great potential in this arena, the communication costs are prohibitive. Again, with the promise of a more liberal telecom environment, this situation is expected to change in the near-term.

The main body of the ICT Assessment report puts forward recommendations for consideration by OECS. These are constructed to provide direct input into the Phase II initiative being undertaken by GOPA. In addition, a separate set of recommendations has been developed for consideration by USAID. These are preliminary and are published under a separate cover, as their value is for USAID's internal use only and are not available to the general public.

The ICT Assessment Team was comprised of Darrell Owen, Senior ICT Adviser, Carana Corporation, and Jody Westby, President, The Work-it Group. The ICT Assessment Team wishes to especially thank Cecil R.M. Bartholomew, Director Information Technology, and Paul Hughes, for their support throughout this ICT Assessment. They responded on very short notice and provided exceptional support to our efforts. We would also like to thank OECS, ECTEL, and Grenada's NTRC personnel for the opportunity to work with them during the course of this Assessment and for their support throughout the time spent in country. In addition, the team wishes to thank those within the various Government Ministries, donor organizations, universities, NGOs, and private sector firms who were so generous with their time and patient during the course of our conversations. We trust this combined effort will lead toward meaningful ICT-related action that will bring about substantive improvements throughout the OECS region and Grenada.

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I. Background/Context

This Information & Communication Technology (ICT) Assessment was undertaken by Carana Corporation, under contract to the U.S. Agency for International Development (USAID). The Assessment is part of a larger initiative being undertaken by USAID/Carana in support of the Organization of Eastern Caribbean States (OECS), specifically to provide technical assistance to the Eastern Caribbean Telecommunications Regulatory Authority (ECTEL) and the five National Telecommunications Regulatory Commissions (NTRCs).

In summary, the technical assistance being provided to OECS, ECTEL, and the NTRCs, is primarily oriented toward telecommunications market liberalization in the region. However, this is in support of an even larger purpose -- that of seeking to leverage ICTs for economic growth within the Eastern Caribbean region.

This ICT Assessment reaches beyond the telecommunications issues; it seeks to gain a broader understanding of the overall utilization of ICTs in Grenada and to analyze supporting educational and governmental considerations. The primary purpose of the Assessment is to identify current constraints to and opportunities for advancing ICTs in the region. The ICT Assessment is being coordinated closely with the OECS Secretariat and is considered Phase I of a two phase initiative. Phase II is a regional policy and strategy initiative being carried out by GOPA through World Bank (WB) funding. Thus, this ICT Assessment will serve as a precursor to the follow-on GOPA regional policy and strategy work.

This ICT Assessment for Grenada is the first of five ICT Assessments to be carried out for each of the ECTEL countries during February and March 2002. Combined, these five ICT Assessments will provide direct input into the GOPA initiative that is scheduled from March-June 2002.

In addition to providing support to OECS/ECTEL, this ICT Assessment is being carried out in a manner consistent with USAID's focus on leveraging ICTs in developing and emerging economies. In recent years, USAID's increased attention on using ICTs for international development was reinforced by the G-8 Summit that took place in July 2000 in Okinawa, Japan, and the subsequent adoption of the Digital Opportunity Task Force (DOT Force) Agenda in Genoa, Switzerland in 2001.[1]

In large part, this increased global focus is predicated on the growing awareness of the impact that ICTs have had on the U.S. economy over this past decade. While the "dot-com bubble" has created some economic uncertainties, for the most part, the market has sorted out the excesses. The actual impact of ICTs has been captured and well documented in a series of

[1] *See* DOT Force official Web site at http://www.dotforce.org/about/.

annual reports prepared by the U.S. Department of Commerce, culminating with the June 2000 report, *Digital Economy 2000*.[2] A brief summary of this report is reflected in Appendix A.

ICT Assessment Structure/Approach

This ICT Assessment has been structured in such a manner as to provide not only a basic level of uniformity among the five ICT Assessments being carried out for ECTEL, but also a level of consistency with similar USAID-funded assessments. As such, it relies on a "4-Ps" template in an effort to capture and categorize information from a wide array of sources and to present it to the reader in a readily digestible format. The four "Ps" are as follows, with a section of this report devoted to each:

1) **Public Sector**—This section focuses primarily on (a) Government ICT policy and the supporting legal/regulatory framework and (b) the actual use of ICTs by the Government. The coverage of telecommunications policy is minimal due to parallel ECTEL/NTRC work in this area.

2) **Pipes**—The thrust of this section is on telecommunications infrastructure, access, and price. It relies upon a core set of information from the International Telecommunications Union (ITU) Development Indicators reports.

3) **Private Sector**—This section examines the state of development of the IT industry sector and the use of ICTs by traditional businesses.

4) **People**—This section analyzes the education systems relative to producing students and workers with ICT-related skills.

From a methodology perspective, this ICT Assessment was carried out in two parts: (1) research based on a number of prior ICT-related studies and reports produced over the past 2-3 years by various organizational entities, and (2) a one-week on-the-ground assessment during which time a number of interviews were undertaken with individuals from the public, private, and educational sectors. Naturally, with such an abbreviated approach, this ICT Assessment report will not capture all the details.

In this regard, the ICT Assessment is a survey intended to gather sufficient information across a broad array of ICT-related sectors, but it is not designed to be a comprehensive reporting of details (several others have done an excellent job of this in selected areas). This Assessment intends to support recommendations put forward to OECS and USAID regarding potential areas for future engagement. Its purpose is to be a catalyst, not a catalog.

[2] *Digital Economy 2000*, U.S. Department of Commerce, http://www.esa.doc.gov/de2k2.htm.

Prior ICT-Related Studies

The Bibliography, captured in Appendix C, reflects a number of information sources, including earlier studies, which have been taken into account in carrying out this ICT Assessment. Many of these proved to be invaluable resource materials in preparing this report. One of the more recent, and valuable, reports was undertaken in June-August of 2001 by Alwyn Didar Singh on behalf of the Commonwealth Fund for Technical Cooperation. The report, *A Rainbow Technology for a Rainbow People: E-Business Capacity Development for the CARICOM,*[3] incorporated the Harvard Center for International Development's "Readiness for the Networked World" assessment methodology as part of its analysis.[4] As such, the report reflects a country-by-country review of key ICT-related issues using the Readiness Guide's e-readiness framework of:

- Infrastructure Framework (Connectivity and Cost)
- Policy Framework (E-Leadership and Participation)
- Legal Framework (Security and Privacy)
- Human Capacity Framework (E-enabled Human Capital)
- E-Business Environment: Enabling Seamless E-Commerce
- The International and Regional Framework.

This ICT Assessment in no way seeks to duplicate the excellent efforts of this study, but rather intends to help move an ICT agenda forward in key areas of interest to Grenada, OECS, and USAID.

The Country of Grenada

Grenada is a small island nation within what are considered the Windward Islands of the Caribbean. The country gained its independence from England on February 7, 1974. The island is just 344.5 square kilometers (133 square miles) with a population of 99,500 (1998). Officially, Grenada consists of not only the main island of Grenada, but also Carriacou, Petit Martinique, and a number of small islands of the Grenadines. The capital city is St. George's, with Gouyave and Grenville being secondary cities within Grenada. Land use is predominantly agriculture-cultivation (32%), forests (9%), pastures (3%), and other (56%).

The Government is a Constitutional Monarchy where the Head of State is the Queen of England, and the Head of Government is the Prime Minister. There is a Cabinet that is appointed by the Governor General (on the advice of the Prime Minister). The Legislative Branch consists of a Parliament with a 13-member Senate and a 15-member House of Representatives.

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[3] Alwyn Didar Singh, *A Rainbow Technology for a Rainbow People: E-Business Capacity Development for the CARICOM (draft 15.0.01)*, Report of Diagnostic Mission, Commonwealth Fund for Technical Cooperation, Commonwealth Secretariat, London, June-August 2001 (hereinafter "*Rainbow Report*").

[4] "Readiness for the Networked World," http://www.readinessguide.org.

Administratively, Grenada is divided into 6 parishes and 1 dependency (Carriacou and Petit Martinique).

Grenada has a Gross Domestic Product (GDP) of approximately US$300 million (Purchasing Power Parity-1996), with a GDP per capita (again on a PPP basis) of US$3,200. The currency of Grenada is the Eastern Caribbean dollar (EC$), which has an exchange rate of EC$2.7 to US$1. Primary industries in Grenada are food and beverages, textiles, light assembly operations, tourism, and construction. Major trading partners are its neighboring CARICOM countries, the United Kingdom (U.K.), the U.S., the Netherlands, and Germany. The labor force consists of approximately 40,000 workers. Grenada's population is highly literate (estimated at between 85-98%), with English as the dominant language.

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I. Public Sector

A first critical component of this ICT Assessment was an evaluation of the Government of Grenada's position relative to ICTs. Specifically, this focused on two key areas:

1) The Government's policy and legal framework pertaining to the areas that directly and indirectly impact the widespread deployment and utilization of ICTs within Grenada (specifically with regard to telecommunications and e-commerce); and
2) The Government's actual use of ICTs to provide e-government services and benefits to citizens and to automate and streamline key Ministries and the functions/activities that they carry out.

Summary/Analysis

National Plan

The Government of Grenada has finalized a comprehensive ICT strategic and tactical plan entitled *Information and Communication Technology – A Strategy and Action Plan for Grenada 2001-2005* (National ICT Plan). The National ICT Plan provides a comprehensive vision, mission, strategy, and roadmap for addressing a wide-range of ICT-related topics. It was prepared by the Prime Minister's Office, under the direction of Cecil R.M. Bartholomew, Director of Information Technology. To provide ongoing direction and operational support, a new Central Information Management Agency (CIMA) is being proposed to assist in moving this well thought-out plan from paper to reality. The National ICT Plan also calls for the creation of Information Management Units within each Ministry or agency to ensure adequate internal capabilities to support their ICT operations.

The plan reflects strong support and commitment from the Prime Minister. His vision is clear in his statement that, "My government is totally committed to the development of Grenada as a Knowledge Society by 2010."[5] Key points of the report include:

"Mission:

- To put Information and Communication Technologies (ICTs) at the center of Grenada's social and economic development as a dynamic industry sector in itself, and in support of the development of other sectors of the economy.
- To establish a knowledge-based society as the platform on which to foster, accelerate, and sustain long-term social, cultural, and economic development.

[5] *Information and Communication Technology: A Strategy and Action Plan for Grenada 2001-2005,* Office of the Prime Minister, St. George's, Grenada, Statement of Prime Minister Dr. Keith Mitchell at 10.

Strategy:

- The Government will create an enabling environment to attract local and foreign investors through appropriate policies, legislation, and improved public sector efficiency."
- "The strategic intent of the government is to enable affordable access to global information to all its citizens including disadvantaged persons. The strategic intent seeks to pursue a sustainable process of action and review which is based on the synergistic development of:

    - Education and training to develop human resources in the necessary ICT and business skills;
    - Use of ICT to expand the horizons and capacity of existing businesses and recruit new industries to Grenada;
    - Deepening the use of ICT in government to increase its efficiency and transparency in particular in support of 1 and 2 above;
    - The implementation of a focused promotional strategy, directed at the business and government sectors and civil society."[6]

The National ICT Plan further articulates a comprehensive approach for building the capacity of the national infrastructure, promoting universal service/access to the Internet, developing e-commerce, and deploying e-government applications. It provides an excellent framework and strategy for achieving specific, actionable items to advance the public, private, and social sectors in Grenada by leveraging ICTs throughout the country.

Consistent with the National ICT Plan, substantial efforts have been underway through ECTEL and the Grenada NTRC to liberalize the telecommunications environment and move it from a monopoly to a fully competitive marketplace this year. Efforts are already underway to create an enabling environment for local and foreign investors to participate in providing expanded telecommunications access to Grenada—a key element of the strategy. It is anticipated that licenses for new operators (Internet, wireless, and eventually wire line and international), will be issued and will result in expanded access and improved service at lower cost for the Government, business community, and citizens of Grenada.

Like all plans, the effectiveness of the National ICT Plan is dependent on the execution of its contents. In this regard, the most critical factor underlying the Plan's ultimate success will be the level of funding that can be obtained from the Government of Grenada and/or the donor community for undertaking key initiatives. Because the National ICT Plan is so comprehensive, many of the areas relating to the public sector that are discussed in this report are directly linked to this planning document.

[6] Id. at 10-11.

Legal and Regulatory Framework

Grenada has essentially no legal or regulatory framework to support the use of ICTs. There are no laws pertaining to electronic transactions, electronic signatures and certificate authorities, cybercrime, protection of data, economic espionage, consumer protection, personal privacy, online activities, or e-procurement. Intellectual property laws are on the books, but have not been updated. Without question, the lack of an adequate legal framework will inhibit the use of technology and will certainly deter foreign direct investment (FDI) for call centers, "back room" data processing, data bank development, and data storage operations. Due to the upcoming Doha GATT round and recent focus on e-commerce in the Free Trade Agreement of the Americas (FTAA) countries, it is imperative that any legal initiatives be undertaken in a manner consistent with the global developing legal framework for ICTs.[7]

Grenada's legal framework is also not very conducive to doing business. According to local experts who assist businesses in their accounting and legal matters, the biggest hurdle to doing business is how long it takes the Government to respond to requests for information, especially requests that pertain to the different types of licenses that must be obtained. Although several years ago, Grenada and USAID considered establishing a one-stop shop for assisting businesses through the administrative process, the idea was never pursued. Tasked with attracting and facilitating the growth of industries in the country, the Grenada Industrial Development Corporation (GIDC) claims to be such an entity, but in reality they only provide tax incentives and limited assistance. Companies still must shuffle from Government counter to Government counter. Customs is also reportedly slow and corrupt. The formation of a company requires the usual articles of incorporation, a list of directors, addresses, and a name search request, plus a fee of EC$1,200. Corporate taxes are 30% of annual net profit.

There are no limitations on foreign ownership of businesses or restrictions on the free movement of capital and profits. In some respects, Grenada's attempts to attract foreign investment have backfired. Grenada's laws regarding offshore financial institutions have done more to deter foreign direct investment than attract it. For the past several years, Grenada has been on the OECD's Financial Action Task Force (FATF) blacklist due to the secrecy afforded these institutions. Although these offshore entities must pay an application fee of EC$10,000 and an annual fee of EC$40,000, they do not bring a substantial amount of revenue into the Government. Total revenues in 2000 were only around US$11 million.[8] They are exempted from most taxes and fees for twenty years and, based upon the type of company license they have, only pay a set amount of taxes annually. For example, offshore companies pay a tax of only US$250, banks pay between US$13,000 to $15,000, insurance companies pay US$5,000, and trusts pay US$6,000 to $10,000 annually.[9] Regulation of these entities is the responsibility of the Grenada International Financial Services Authority (GIFSA). The local business community does not consider these offshore institutions to be of value to Grenada. Instead, stories abound of entities -- especially offshore Internet gaming companies -- packing up in the middle of the night, leaving creditors and employees empty handed. Grenada has enacted several

[7] *Rainbow Report* at 20.

[8] *Grenada Government at Work: Year in Review June 2000 to June 2001*, Government of Grenada at 23.

[9] "Offshore Services in Grenada," *The Greeting*, 2001 at 16-17.

amendments to their national laws aimed at remedying the deficiencies noted by the OECD in order to be removed from the FATF blacklist. Laws enacted include the International Financial Services Act of 2002, the Grenada International Financial Services Authority Act of 2002, the Offshore Banking Act of 2002, the Money Laundering Prevention Act of 2002, and the International Companies Act of 2002.[10]

Although Grenada is seeking to boost its high-tech industrial base, it has no incentives specifically targeted at attracting ICT companies and virtually no suitable space in its industrial parks. For the most part, incentives and available space are tailored to the manufacturing and tourism industries. GIDC is currently evaluating a proposal to build an ICT industrial park by 2004 that would also house training centers. Import tariffs on ICT equipment run 5% for personal PC *systems* and 10% for business *systems*. If a complete system is not imported, tariffs on individual components -- including software -- are 67%. In addition, there is no duty free bonded warehouse to help facilitate the development of ICT industries.

The judicial system is in dire need of assistance. The Court Registry is inundated with disintegrating documents piled in dust. A courthouse administration and case management system is badly needed. A few years ago, the Court received an IBM mainframe for document automation, but it remains crated in a storage room with boxes toilet paper stacked on top of it because there is not an adequate facility to properly house it. The Court Registry has received some USAID funds to establish a court reporting and transcription capability, but it is only now getting underway. At present, judges are tasked with drafting the court record by hand, thus, creating a court backlog. None of Grenada's laws are online, and the last hard copies were produced about 10 years ago. This causes time-consuming searches by attorneys and judicial personnel, plus it imposes a barrier for citizens and businesses who seek access to the laws that apply to them.

Ministry of Communications and NTRC

Although the National Telecommunications Regulatory Commission (NTRC) is still technically within the Ministry of Communications, Works and Public Utilities, it is housed separate from the Ministry. Its independence is compromised, however, by the required Ministry approval of licenses. The NTRC is responsible for the implementation of the newly enacted Telecommunications Act and the licensing and regulation of communications providers. Although newly established, it is working hard to advance ICTs in Grenada. It is clear, however, that additional technical assistance and training would strengthen the agency's operations. Specifically, training for administrative and support personnel would foster a better understanding of NTRC functions, instill professionalism within the NTRC, and enhance communications with the private sector. Relations and communications between the NTRC, ECTEL, and OECS also need to be strengthened.

Concerns regarding the licensing process linger. The NTRC makes little effort to communicate with the industries it regulates and appears in certain instances to be showing

[10] *FATF Annual Report for 2001-2002 released*, Organization for Economic Cooperation and Development, http://www.oecd.org/EN/document/0,,EN-document-590-17-no-12-31431-590,00.html.

favoritism to inside Government players. Additional concerns exist over the licensing requirements for Internet Service Providers (ISPs). ISPs must apply for and receive a class license from the NTRC before establishing operations. This also encompasses Internet cafes.

Government Use of ICTs

Government use of ICTs is hindered across the board due to lack of funding, space, hardware, and software requirements. Grenada's new ICT Director has been trying hard to find suitable space to house Government systems. At present, even he and his small staff are in temporary offices. Of all the Government entities, the Ministry of Education and the Post Office are farthest along in the use of ICTs, but they also face the same constraints.

The Post Office is corporatized. It is owned by the Government but gets no Government funding. The Post Office has established three Internet cafes, of which two are in St. Georges. The cyber cafes have ADSL lines and offer training in some software packages. The Post Office has filed for ISP licenses and is considering moving into Internet services, online training, banking and shopping, Web hosting, and online advertising. There are 59 post offices around the country, but all do not have access to telephony infrastructure.

The Ministry of Education has completed wiring 22 secondary schools and has a lab of 27 PCs in each school, plus each principal and secretary have PCs wired into the Ministry's network. Each school has its own Internet address. As in all the islands, system support is a continual problem. Two teachers in each school have been trained as network administrators to provide the first tier of support. The school labs are often open late into the evening to allow students to do their work. The goal of the Ministry is to graduate secondary students who are fully competent in computer skills. The computer labs are also used during the summer for ten-week adult courses in basic ICT skills. To date, this program has trained approximately 2,000 adults, including every teacher in every school.

Primary schools are not quite so far along. However, the Ministry obtained US$2-3 million from the government of Taiwan that has enabled them to purchase PCs for 58 primary schools.

Identified Areas for Further Pursuit

The above reflects a strong, focused commitment on the part of the Government of Grenada to leverage ICTs to bring about improvements in the public, private, and social sectors and to boost the national economy. The following represents a few priority "Public Sector" issues where additional attention is warranted:

A. E-Business Legal and Regulatory Reform—One of the key missing ingredients is the need to develop Grenada's legal framework to support e-commerce/e-business in Grenada. The lack of any laws that adequately address privacy, encryption, cybercrime, electronic records and transactions, digital signatures, and e-banking will significantly hinder Grenada's efforts to advance the deployment and utilization of

ICTs. The development of these laws and regulations, however, needs to be in harmony with the global developing legal framework. Ideally, such laws could be developed in a collaborative regional initiative in much the same manner as was undertaken for telecommunications via ECTEL and the country NTRCs, where model laws/provisions were drafted (perhaps at the OECS level) with each country then localizing to the degree needed to meet their country's legal structure.

B. Strengthened CIMA—The Central Information Management Agency is only just now moving Grenada's National ICT Plan forward. This Agency is essential for "carrying the torch" forward over the next several years and providing continuity, consistency, and coordination across the Government in the utilization of ICTs. CIMA will work with the various Governmental Ministries to gain support and implement key elements of the National ICT Plan. Support in staffing the Agency and in providing adequate funding and technical assistance for key ICT-related initiatives outlined in the Plan is critical to the ultimate success of the National ICT Plan.

C. Targeted ICT Government Initiatives— The National ICT Plan is doable. With only 5,000 Government employees, an experienced ICT Director, and the Prime Minister's support, Grenada has the opportunity to become a model for other developing countries in the region and across the globe. The National ICT Plan lays the foundation for a number of targeted initiatives, including several that will automate key functions of the Government. Although there are a growing number of PCs in the various Ministries, few of these are connected via Local Area Networks (LANs) and none are connected via a Wide Area Network (WAN). As a result, there are few, if any, network services (i.e., e-mail or Intranet) for improving the internal efficiencies of Government. User training in PC/network awareness and proficiencies is needed. In addition, there is a lack of IT technical support to keep the PCs and network operational. One Ministry, for example, reported that there were only two PCs in the entire Ministry working; the rest were broken, with no one to service them. As an essential starting point, it is important that a concerted effort be made to establish inter-Ministerial communications and network services for key managers and professionals throughout the Government, including the offices and individuals located in remote Parishes. A more detailed requirements analysis, supported by technical assistance, is needed to move the National ICT Plan forward on this front.

One area needing immediate attention is the Government's various Court Registry functions where a variety of court (civil and criminal), land, business, and other registration processes are handled. At present, a smattering of efforts are already underway, but current automation efforts have the potential of adding only further inefficiencies to the current processes unless a more comprehensive analysis of the requirements and possible solutions is undertaken quickly.

D. E-Government—As access to and use of the Internet expands in Grenada, there is the opportunity to provide key Government services to the business community and citizens via the Internet. Access to Government information and services could be via cyber cafés, postal shops, and rural telecenters, as well as via kiosks located at various

public locations, such as community centers. The National ICT Plan envisions moving forward in this arena with the establishment of a three-tiered Government portal to provide not only the interface between citizens and Government, but also e-government transactions and back office processing. There are several key processes that could be identified as pilot projects that would have broad application and significant impact. The obvious benefit is that the Government's use of ICTs could well pave the way for expanded private sector usage of ICTs.

II. Pipes

One of the underlying components increasingly recognized as critical to the development of any nation is the communications infrastructure. In recent years, this has become even more important as globalization expands and nations increasingly rely upon ICTs to participate in the global marketplace (e.g., e-commerce and e-business).

This portion of the ICT Assessment examined the in-country telecommunications environment from several perspectives and levels, including:

1) Summary/findings of the communications infrastructure in Grenada; and
2) Key observations from 1999 International Telecommunications Union (ITU) data.

Summary/Findings

Current Situation

Grenada enjoys a well-developed communications infrastructure with a considerable amount of fiber optic spread across the island, including into some rural areas. There remain, however, some areas without connectivity or access to desired services.

Cable & Wireless Grenada Limited (C&W) is the monopoly communications provider. C&W has a long history of operations throughout the Caribbean, but a soon-to-be liberalized telecommunications market that is being undertaken in concert with other ECTEL countries will open the market to competition and lower prices.

According to ITU data, overall teledensity in Grenada is relatively high (31.5:100) compared to comparable Upper-Medium income countries (with an average of 18.04:100). However, there is a disparity between the largest city (St. George's with a teledensity of 53.3:100 and the rest of the country at 31.4:100). The number of households with telephone services (not including mobile) is high at 76.9 percent. Internet use is relatively low (2,500 users in 1999), due in part to high access costs (the number of households with phone lines is high, as is the relative number of PCs in Grenada, leaving open the implication that more residences would have Internet access if the communication costs were not so high). There were an estimated 11,000 PCs in Grenada during 1999, resulting in an average of 11.78:100 people. This is considered quite high, with an average for comparable Upper-Income countries being at 5.8 PCs per100 population.

While the above numbers accurately reflect the situation in Grenada (recognizing that the ITU data is based on 1999 information), over the next few months, the telecommunications environment in Grenada will be undergoing a substantial shift. This will have a tremendous

impact on the "Pipes"—the access to, and pricing of, telecommunications services. Three major dynamics will be taking place concurrently, with the result being a marketplace that is moving in the right direction, but in a somewhat disjointed, perhaps even chaotic manner. First, the dominant carrier, C&W, will likely seek higher local calling rates and lower international rates in an effort to realign its pricing with actual costs. Second, there will be new telecommunications entrants, primarily in the cellular/mobile and Internet arena, bringing alternative providers to Grenada for the first time. Third, there will be an expanded set of services available from these new providers, including wireless Internet, and increased access in currently unserved or underserved regions of Grenada. In all, these should result in a much wider array of services available to a broader population along with different pricing structures.

Throughout the course of the ICT Assessment, a consistent message emerged during interviews: the high cost of telecommunications is having a strong negative impact on business operations and the ability to be competitive and grow. Telecommunications costs are more than just a cost of doing business -- they are a barrier that precludes some companies from reaching outside markets. For schools, telecom costs are the barrier to providing high quality distance education. For the public sector, they are high hurdles to envisioned e-government services and the ability of citizens to access them. While other concerns also surfaced, this cost factor, and in some cases, speed/capacity for enhanced data services, was the single most commonly voiced issue.

ITU Telecommunications Information – 1999 Statistics

Each year the International Telecommunications Union (ITU) publishes a *World Telecommunications Development Report* (*Development Indicators Report*)[11] that provides statistical data for all countries. Its most recent comprehensive report, issued in March 2001, included an expanded set of data that, for the first time, included data on mobile cellular. In addition to this worldwide report, the ITU periodically publishes regional-specific reports with more detailed discussions on a given geographical region. In April 2000, an *Americas Telecommunications Indicators 2000* report was published that provided useful data for this Assessment.[12]

The ITU-compiled data serves as a rich resource that is helpful in understanding the dynamics taking place in telecommunications. While there are several acknowledged weaknesses in the reports (such as timing, accuracy, and incompleteness), they still remain the best set of normalized data from which trends can be identified and macro-level regional/country comparisons can be made. For purposes of this ICT Assessment, selective 1999 data (the most recent available from the ITU) has been extracted from the 2000-2001 *Development Indicators Report* for the ECTEL countries, plus a few other Caribbean Islands (Barbados, Jamaica, and Trinidad/Tobago). Combined, this provides a basis for grasping the current telecommunications situation in the ECTEL countries, including Grenada.

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[11] *World Telecommunications Development Report 2000-2001-- World Telecommunications Indicators*, ITU, Geneva, March 2001.

[12] *Americas Telecommunications Indicators 2000*, ITU, Geneva, April 2000.

The following key observations were derived from reviewing and analyzing these sets of data. The actual data from which these were prepared are contained in Appendix B of this report.

Basic Indicators

- The populations of the ECTEL islands are small (typically less than 100,000), but relatively concentrated (with between 100 to nearly 300 people per square kilometer), due to the small size of the islands; Grenada has 271 people per square kilometer.
- The economies of the ECTEL islands are relatively small (between US$300-600 million annual GDP), but on a per capita basis, they are relatively high (between US$2,400-6,000 per capita GDP), placing most ECTEL countries in what is considered the Upper-Middle income band. Grenada's GDP is US$300 million with US$3,635 GDP per capita.
- Relative to the world average for Upper-Middle income countries, the ECTEL countries have a higher than average teledensity (ranging from 28-52 whereas the average is 20); Grenada's teledensity is 31.51. St. Vincent/Grenadines is a Lower-Middle income country, but here too, it is above the average of similar countries (teledensity of 21 versus an average of 12).

Main Telephone Lines

- With the exception of St. Kitts/Nevis and St. Lucia, growth in main lines and teledensity between 1995 and 1999 is less than the world averages for similar income level countries; Grenada's compound annual growth rate (CAGR) in main lines was 6.1 percent compared to 9.1 percent for Upper-Middle income countries, but close to the world average CAGR of 7.0 percent.

Local Telephone Network

- Used switching capacity across all the ECTEL countries is 61-83 percent (Grenada is 83 percent). The world average is 81.4 percent and the average for Upper-Middle income countries is 84.4 percent. Dominica and St. Vincent/Grenadines fall significantly below this rate, with only about 61 percent of switching capacity used.
- All the switching capacity for the main telephone lines is 100 percent automatic and digital.
- The percentage of main telephone lines that are residential is higher than countries with comparable income levels (76-85 percent versus an average of 75 percent for Upper-Middle income countries). Eighty-one percent of Grenada's lines are residential.
- While the data is not available for all ECTEL countries, the faults per 100 main lines appears significantly less than other Lower-Middle and Upper-Middle income countries (no doubt due in part to digital switching and a more concentrated user base). Grenada has only 1.1 faults per 100 main lines per year, compared to an average of 19.8 for Upper-Middle income countries.

Teleaccessibility

- The percentage of households with phones throughout the ECTEL countries is considerably higher than the world averages for the Lower-Middle and Upper-Middle income countries (70->100 percent compared to 38-58 percent; Grenada has 76.9 percent residential main lines per 100 households).
- The ECTEL countries' number of public telephones per 1000 inhabitants is quite close to the world average for their respective income level, however, as a percentage of main telephone lines, they are somewhat lower than the world average (likely due to the high level of phone lines that exist in households). Grenada has 2.17 public telephones per 1000 inhabitants compared to an Upper-Middle income average of 4.22.

Largest City Main Lines

- With the exception of Dominica and St. Vincent/Grenadines, the percentage of the population of the ECTEL countries living in the largest city is considerably higher than comparable income level countries, but likely consistent with small island nations.
- Teledensity of the largest ECTEL cities appears to be quite high (53-82 compared to 28 for Upper-Middle income countries) but, again, this is likely due to the nature of island nations. However, some data is missing for several of the islands. Grenada's largest city teledensity is 53.3 compared to an average of 27.87 for Upper-Middle income countries.
- There is a significant disparity between the teledensity of the largest city and the rest of the country (e.g., for Dominica, the largest city which contains only 13.5 percent of country's population has a teledensity of 82.22, whereas the rest of the country has a teledensity of 17.37). This is an extreme situation, but reflects the disparity, even though in most cases this is not as exaggerated. Grenada's teledensity for its largest city is 53.3 compared to an overall country teledensity of 31.51.

Telephone Tariffs

- Connection rates for linking up telephone service are typically less in ECTEL countries than in countries with similar income levels (for both residential and businesses). For Grenada, the costs are close to the world average for Upper-Middle income countries (US$85 for both residential and business compared to an average of US$82 and US$129).
- Monthly subscription costs for Grenada are considerably higher than the average for Upper-Middle income countries (for residential, US$14.10 compared to US$8.10; and for business, US$40.70 compared to US$15.60). It should be noted that this is 1999 data, and rates have since been reduced.
- Grenada's Telephone Tariffs as a percentage of GDP are very high compared to other Upper-Middle income countries (4.6 percent compared to an average of 1.8 percent).

Cellular Subscribers

- Cellular/Mobile data for ECTEL countries is sketchy and, therefore, its use is limited for drawing conclusions.
- It is clear that the entry of Cellular/Mobil has been late in coming to the ECTEL countries, and that, across the board, the growth rate between 1995 and 1999 has been considerably less than the growth in countries of similar income levels (24-60 percent on a very small base, whereas the average growth rate for the Upper-Middle income level is nearly 85 percent for this same period). Grenada's compound annual growth rate for 1995-1999 was 49.8 percent.
- Teledensity of Cellular/Mobile as of 1999 is considerably less than countries with comparable income levels (teledensity of Cellular/Mobil of ECTEL being between 1 and 2 whereas the average for Lower-Middle is over 2, and for Upper-Middle income countries it is over 13). Grenada's teledensity of Cellular/Mobile subscribers is 2.15.
- Cellular/Mobile as a percentage of the total teledensity is considerably less than averages for comparable countries (3-6.5 percent compared to 16-40 percent). This is due to a late start, but also likely influenced to some degree by the relatively high main line telephone teledensity. The total teledensity for Cellular/ Mobile subscribers in Grenada is 6.4 percent.

International Telephone Traffic

- The outgoing international traffic from the ECTEL islands on a per inhabitant basis is completely "off the charts" relative to comparable income level countries (88-333 minutes per inhabitant for ECTEL countries compared to an average for Upper-Middle income countries of 16). Grenada's outgoing international minutes per inhabitant is 110.5.
- On a per subscriber basis, this comparison is equally significant (333-652 minutes compared to 79 minutes for Upper-Middle income countries). Grenada has 350.7 outgoing international minutes per subscriber.
- These disparities are most likely due to the nature of a tourist-based economy, but are also likely to be partially due to island Diaspora and family members living in the U.S., U.K., and Canada.
- The extremely high outgoing international traffic is a real "cash cow" for the incumbent telecommunications provider and will require serious attention during market liberalization.

Telecommunications Staff

- Across the ECTEL countries, it is quite clear that between 1995 to 1999, the current telecommunications provider (C&W) has been undergoing cost-reduction efforts, including dropping staff (0.3 – 7.2 reduction in staffing for this period).
- The number of main lines per telecommunications employee has naturally grown over this same period, but for the Upper-Middle income countries, ECTEL countries are still considerably below the world averages (107-130 lines per employee compared to

an average of 179 for Upper-Middle income countries and a world average of 154). For St. Vincent/Grenadines, the comparison is favorable (142 compared to an average for Lower-Middle income countries of 92). Grenada has 109 main lines per employee.

Telecommunications Revenue

- While information is sketchy for the ECTEL countries, on a per inhabitant basis, telecommunications revenue is considerably higher than the average for similar income countries (US$219 compared to US$31 for Lower-Middle income and US$175-713 compared to US$146 for Upper-Middle income countries).
- There is also considerably higher revenue for the ECTEL countries on a per line basis as well as a per employee basis (US$628-1,512 compared to US$733 for Upper-Middle income countries and US$256 for Lower-Middle income countries).
- Telecommunications revenue as a percentage of GDP is also very high for the ECTEL countries (5.1-10.4 percent compared to an average of 2.1 percent for Lower-Middle and 2.9 percent for Upper-Middle income countries).

Telecommunications Investment

- The ITU report does not provide sufficient information on the ECTEL countries to detect much in the way of telecommunications investments other than to say it appears to be within the averages relative to population, but lower than average relative to telecommunications revenue.

Information Technology

- Overall, the number of Internet hosts in the ECTEL countries is considerably below the averages for similar income countries. Dominica, while still under the average, is at least close (excluding Dominica, the range is .3-2 hosts per 10,000 population whereas the average for Upper-Middle income countries is 37; Dominica is 24). Grenada has .32 hosts per 10,000 inhabitants.
- The number of Internet users in 1999 is very low, with 2,000-3,000 per country. The number of Internet users per 10,000 population ranges between 195-516 in ECTEL countries compared to the average for Upper-Middle income countries of 461; Grenada has 268 users per 10,000 population.
- There is a high percentage of PCs per 100 population compared to other countries of similar income levels (6.5-15.5 per 100 population compared to 2.6 for Lower-Middle and 5.8 for Upper-Middle income countries). Grenada has 12 PCs per 100 population.
- The relatively high availability of PCs and the comparatively low use of the Internet is likely a direct result of limited access and costs (but mostly costs, since there are a high number of main lines per household across the ECTEL countries).

Network Growth

- Growth in the number of main lines taking place between 1998-1999 in the ECTEL countries is close to the averages for similar income countries, with Dominica and Grenada being slightly less (Dominica's compound annual growth rate (CAGR) is 6.3, and Grenada's is 7.1; the average for Upper-Middle income countries is 9.4).
- With the exception of St. Vincent/Grenadines, the growth in Cellular/Mobile for ECTEL countries is well below the growth rates for countries with comparable income levels (43-60 percent compared to 85 percent for Upper-Middle income countries; St. Vincent/Grenadines had an 89 percent growth in 1999 and Grenada's growth rate was 42.7 percent).
- Growth in Internet hosts throughout the ECTEL countries is also well below comparable averages, but data is insufficient to make any additional observations.

Identified Areas for Further Pursuit

The foregoing paints a picture of "Pipes" that is on the verge of significant dynamics due to near-term telecommunications market liberalization, which will have a profound impact over the next few months and extending for several years. The following, however, are a few "Pipes" issues where additional attention is warranted now:

A. **Rural Access**—As Grenada pursues a liberalized telecommunications market, it is important to address the "digital divide" issue within the country. Simply put, in remote, low-density, and low income areas of the island, even a liberalized market may not be adequate. Ultimately, universal service provisions will establish a form of cross subsidization for providing access to those living in these areas. However, regardless of the funding source, there is the need to ensure that as the market matures in the richer areas, there are not populations left behind in less attractive areas of the island. The cyber cafés initiative of the Grenada Postal Corporation calls for Internet access in each of its 59 "Post Shops." These and similar private and NGO community access initiatives should be explored and put into place as early as possible.

B. **Video Uplink**—In small island broadcast markets, it is virtually impossible for local cable and broadcast operators to justify purchasing uplink hardware to broadcast periodic political, sporting, or international events out of the country. The result is an inability to exchange regional news and bring Caribbean events to the global stage. As OECS seeks to promote closer integration of its members, there appears to be an opportunity to provide a regional solution that would enable the individual countries to share a video uplink capacity. This could be via the joint acquisition of a transportable "Fly Away" video uplink capability that could be provided across the islands on an on-demand basis to both public and private entities.

C. **Shared Distance Education Facility**—Education has always been given a high priority in Grenada and, in recent years, the country has moved aggressively to place PCs and the Internet in secondary schools. In addition, private schools operating in Grenada (e.g., the University of West Indies non-campus program and St. George's

University) currently use distance education capabilities in delivering their curricula. Due in large part to costs, at present, these are restricted to audio or low-speed Internet. There appears to be a collective demand for video streaming of course content to these educational facilities. There may also be an opportunity to share a hub/teleport facility on the island, which would allow a shared facility to receive broadband and then transmit it to the actual delivery point via terrestrial microwave. The purpose of pursuing this alternative would be to expand capacity at a number of educational institutions at a limited cost, while simultaneously improving the availability and quality of education in Grenada.

III. Private Sector

Ultimately, it is the private sector that must generate the business activity that establishes and maintains economic growth and improves the living standards of citizens. This third area of the ICT Assessment focused on two key areas relative to leveraging ICTs in Grenada:

1) Determining the strength and potential of the ICT-related sector in domestic and international markets; and
2) The utilization of ICTs by the local business community in an effort to improve the productivity and efficiency of their operations and, where appropriate, to potentially become more competitive in the regional and global marketplace.

Summary/Analysis

National Economy and Private Sector Industries

Overall, the economy in Grenada is suffering from a downturn in tourism and diminishing banana subsidies. There seems to be broad acceptance that the country is in for a decade of economic reform that will require the refinement and development of industry sectors. Any definition of what that means, however, is missing, and Government planners seem to lack any sort of economic development plan. The only viable plan that seems to exist is the National ICT Plan, which will certainly help other industry sectors become more efficient and competitive and will assist major industry sectors to transform themselves. It is doubtful, however, that any of these benefits will occur in the short term without significant donor support. Eco-tourism, organic agriculture, the fishing industry, and micro specialty products, such as nutmeg products, are potential candidates for the utilization of ICTs and increased competitiveness. Attracting foreign direct investment (FDI) in targeted industry sectors, including the ICT sector, must become a national priority.

The GDP for Grenada is EC$904.64 million for 2002, or approximately US$335 million. The growth rate for 2000 was 8.47 percent—a rate consistent with earlier years. The major sectors contributing to Grenada's GDP in 2000 include:

Government services	16.38%
Transport	15.13%
Construction	10.36%
Tourism	9.03%
Communications	8.23%
Agriculture	7.73%
Manufacturing	7.62%
Other industries	27.00%.

Exports from Grenada totaled EC$210,973, or US$78 million, in 2000. Of this, US$65.2 million were manufactured exports, US$20.1 million were agriculture exports, and US$3.0 million were other exports. The dominant manufactured exports are electronic components (US$53.44 million), followed by flour (US$5.37 million). For agricultural exports, the dominant export was nutmeg (US$13.56 million) followed by fish (US$3.7 million).

Several themes surfaced during the on-the-ground Assessment regarding ICT utilization by the private sector, including:

- There are already a few, with promise of more, call centers operating in Grenada that are primarily off-shore U.S. operations.

- Most firms in Grenada are small businesses that use ICTs primarily for internal operations (i.e., accounting, word processing, etc). Firms are just now moving toward the use of internal local area networks (LANs), but one of the real issues is the lack of technical support staff needed to maintain more sophisticated usage of ICTs.

- There is some limited use of the Internet by businesses within Grenada, but primarily it is used for e-mail.

- Clearly, the high cost of Internet access both constrains and deters expanded use of the Internet. Only a few firms have Web sites (relative to the total number of firms).

- There is not a wide-spread understanding of the value of ICTs and the use of the Internet to reach new customers and expand business opportunities.

On this latter point, the issue is not limited simply to the use of the Internet. There appears to be an overall lack of awareness and understanding within the business community of Grenada about professional business development services. There are several organizations that provide this support, but it is not at all clear that they are of an international caliber sufficient to help the local business community reach outside of Grenada and compete on the international market—a requirement for economic growth in Grenada. Current organizations (some of which are Governmental statutory bodies) that do provide pieces of the private sector development puzzle in Grenada include:

- The Grenada Industrial Development Corporation (primarily for attracting FDI)
- The Grenada Development Bank (GDB)
- The Grenada Chamber of Industry and Commerce (GCIC)
- The National Development Foundation
- The various tourism-related Boards
- The Agency for Rural Transformation
- The Grenada Marketing and National Importing Board (GMNIB).

While some of these organizations do provide small loans, overall, the training and development services provided to the private sector through these institutions appear to have several key weaknesses. As a rule they: (a) have more of a local focus than an international focus, (b) they do not have a good grasp of the outside international/global market and its high-level requirements, and (c) they do not have an understanding of how to leverage ICTs, including the Internet, to reach these international markets. The above limitations, when coupled with the high cost of telecommunications in Grenada and the lack of laws to support electronic transactions, thwart the quite entrepreneurial small and medium-sized business community in Grenada that is so important to Grenada's future economic base.

Businesses have an uphill climb in other areas. Shipping costs are a common complaint, banks are reluctant to open business accounts or merchant accounts for credit card transactions out of fear of "charge-backs,"[13] interest rates are high (even from development banks), and venture and equity capital are difficult to obtain. Small businesses have some support from public and private institutions, but it is minimal.

Identified Areas for Further Pursuit

The foregoing paints a very brief picture of the "Private Sector" in Grenada. The focus has been on leveraging ICTs, primarily in an effort to identify possible opportunities for utilizing ICTs for the economic development of Grenada beyond the ICT industry sector itself. It is anticipated, of course, that the liberalization of the telecommunications market that is now underway will lower costs (especially international costs), helping Grenada to reach beyond her shores. Telecom liberalization by itself, however, will not give Grenada the boost it needs to overcome its current economic difficulties and keep pace with other aggressive developing countries. The following are a few isolated "Private Sector" issues where attention is warranted:

A. Business Development Services—There is a need in Grenada for an effective array of new or upgraded competitiveness and business development services to assist local firms expand their markets and grow. For the most part, this will mean helping businesses gain access to larger off-shore markets for their products in the Caribbean region and in countries such as the U.S., U.K., Canada, and the EU countries. In order to be successful in these markets, local companies must (a) improve the quality and consistency of products, packaging, labels, etc., (b) enhance business management and marketing knowledge/skills, (c) gain access to venture capital, and (d) develop a sound business expansion plan for entering new markets, including all the details for marketing, advertising, distribution, payments, etc. For small and medium-sized businesses, this is a formidable task and will require some collective expert assistance.

B. International Internet Portal—A few companies in Grenada have developed Internet Web sites for their products and services. As a rule, these are in the tourism sector, but some of the larger, local businesses are also advertising their products on

[13] *Rainbow Report* at 34.

the Internet. However, without a legal structure that accepts electronic transactions and limits credit card liabilities, they are reluctant to accept orders and credit cards over the Internet, thereby limiting their online potential and revenue. In addition, as a general rule, small businesses with individual Web sites rarely attract sufficient Web traffic to their sites to be successful in the e-commerce arena. The whole issue of "branding" in this virtual Internet space is problematic even for the largest U.S.-based firms, let alone the smaller "dot-com" companies. However, it does appear there is the opportunity to undertake an initiative that would create a country -- and preferably a regional -- portal or marketplace on the Internet whereby costs could be shared and a "branding" of Caribbean products could be achieved. Shared services such as credit-card validation/banking could be put into place whereby payments could be made by purchasers to a trusted entity. This would create something akin to a "Shop Carib" or "Caribbean Mall" that enabled the small and medium-sized enterprises (SMEs) in the Caribbean to collectively market their products/services on the Internet, much like a local Saturday market. Collective advertisement, hosting, development, shopping carts, banking services, etc., would keep costs to the individual company low, while increasing the potential for generating traffic to the Web site – and the region.

C. **Shared Upstream Services**—Collective support capabilities are also needed to help businesses get their products and services into targeted markets. When individuals buy over the Internet, they also want quick delivery—it is simply part of the customer expectation and value-added of the Internet. Unless a company has warehousing facilities in the target market, it is difficult to satisfy this need for quick turnaround. It is also very expensive to ship small shipments from Grenada to the U.S. or Canada, or the EU. Here again, in a manner similar to the above International Internet Portal, there is the need to establish, on a collective basis, a warehousing facility in each market country. This could be limited to a simple warehousing operation, but, ideally, would include the actual marketing of Caribbean products to a network of outlets in the target markets. This would be a value-added complementary set of services to the in-country business development services discussed above.

IV. People

The widespread deployment and utilization of ICTs is directly dependent upon the ability of a population to become ICT proficient. Whereas the public sector can set ICT strategy and policy, and the private sector can bring together opportunities and needed financial resources, both are dependent upon the intellectual capital of a nation and the ability of its people to provide the requisite skills and human capabilities. In the end, the ultimate change agent is a nation's citizens.

This section explores the intellectual resources of the people of Grenada, their educational background, their capabilities and potential from an ICT-related perspective, and their desire and willingness to develop an ICT industry sector and use ICTs. There are a few countries that serve as development models of success and useful case studies for countries to emulate. Ireland and India are two of the more prominent. Ireland used about a third of its EU infusion money to develop education and human resources that in turn developed knowledge industries, like IT.[14] This section examines Grenada's school systems, private training institutions, and employer training initiatives that are each in their own way critical to supporting the country's potential for increased utilization of ICTs.

Summary/Analysis

Education System

The bedrock of any nation's intellectual capital is its education system. Grenada provides formal education through grade 7 (age 12). Students then take a Common Entrance Examination to gain entrance to secondary school. The number of positions is limited, and students who do not pass the examination can remain in primary school or drop out. Seventy-six percent of primary students go on to secondary school. The country has a goal for all students to be admitted to secondary school by 2005. Secondary schools have vocational/technical and academic departments. Students must pass the Caribbean Examination Council (CXC) examination to graduate from secondary school and be admitted to tertiary level schools.

While various sources reflect slightly different numbers, in summary, the population of Grenada is 100,703 (1999) according to the Grenada Industrial Development Corporation (GIDC). Living on an island of just 344.5 square kilometers, there is a population density of just under 300 persons per square kilometer. July 2001 estimates reflect the age structure of the current population as 37 percent between 0-14 years of age, 59 percent of the population between 15-64 years of age, and 4 percent over 65 years old. Literacy (defined as those age 15 and over who can read and write) is estimated at 95 percent, with virtually no difference between the male and female.

[14] *Business Central Europe*, September 2000, p. 19.

The labor force of Grenada's population is placed at 41,015 (1998), with unemployment of approximately 15 percent, which is believed to be low. Statistics by occupation indicates 62 percent of the labor force is in the service sector; 24 percent work in agriculture, and 14 percent of the workforce is engaged in industry (1999 estimates).

Per Capita Income for 2000 is placed at EC$ 8,922 or approximately US$3,400. Wages in Grenada range on the order of US$200/month for cleaners, handymen, processors, gardeners, and housekeepers, to US$300/month for waiters, bartenders, supervisors, US$500 for masons, carpenters, secretaries, and chefs, and approximately US$1,000/month for engineers, managers, and accountants.

As early as 1997, the Government of Grenada began introducing PCs into secondary schools throughout the island. At present, all 22 secondary schools have computer labs, each with 27 PCs and Internet access. These are networked with a proxy server at each location. Efforts are underway to put PCs in the 58 primary schools based on a grant from Taiwan.

A recent study (October 2001) completed by Michael J. Smith under the auspices of the Commonwealth Network of Information Technology for Development (on behalf of the Ministry of Education), provided an excellent analysis of the current situation. The report, "Critical review of the Ministry of Education's Secondary and Tertiary Computer Education Project" provides in-depth analysis of the current use of PCs/Internet in the public school system.[15]

In summary, the areas needing the most attention (and this was confirmed in Assessment interviews) are: (a) curriculum renovation, (b) training and retention of teachers, and (c) ongoing ICT maintenance support. Faster Internet access is another issue needing attention, as the schools are currently on a 33.6 kbps dialup line. The Smith report puts forward recommendations for addressing these issues.

It appears that considerable efforts are going into addressing ICT teaching and curriculum issues, and improvements are being seen. Success is being reflected in the high percentage of students that pass the Caribbean Examination Council (CXC) exam in technical proficiencies. Further, there is some indication that those with general proficiency (i.e., primarily users such as secretaries and clerks) can enter the local job market successfully. Those with a technical proficiency (i.e., for programming, technical support) do not appear to have adequate skills to work effectively in the marketplace.

The issue of providing long-term day-to-day technical support for the PCs in the computer labs remains a concern. Currently, this is being addressed by providing technical training to teachers in an effort to have the schools provide basic, first tier system administration

[15] *Critical Review of the Ministry of Education's Secondary and Tertiary Computer Education Project: Phase 1 Report (draft: October 2001)*, Michael J. Smith, Commonwealth Network of Information Technology for Development.

support (as "other assigned duties") for their own systems. Additional technical support is provided via a small (and highly understaffed) staff located in the Ministry of Education.

The computer labs in the secondary schools have been used to provide adult education. This has consisted of a 10 week (one session per week) course being offered during the summer when students are not in school. To date, somewhere on the order of 2,000 adults have been trained. However, this last year and likely next year as well, this program was eliminated in order to place a greater focus on training teachers. Current efforts are underway to train every secondary teacher on PCs.

At present, there is no ICT-related Associate or Bachelors program available in Grenada. While the T.A. Marryshow Community College makes heavy use of IT within their programs, they are just now developing an Associate Degree program for IT. And while the University of West Indies (UWI) campus programs do offer Bachelors and even Master programs for Computer Science, these are not delivered to the non-campus locations within the Caribbean, such as Grenada.

Distance education could play an important role in developing Grenada's future workforce, but, at present, it is severely limited due to legal/regulatory restraints (i.e., the UWI cannot operate its satellite link due to C&W's monopoly position) and high costs. Both the UWI non-campus and St. George's University want to do more distance education, but can not afford the communication costs. As the telecommunications legal/regulatory constraints are liberalized, it is anticipated that this will facilitate a rapid deployment of ICTs for distance learning.

Nicholas Negroponte, in his book *Being Digital* remarked: "Nations today are the wrong size. They are not small enough to be local and they are not large enough to be global."[16] As Grenada seeks to increase its focus on developing an ICT-enabled workforce, it must cultivate both the international and local market to increase its human capacity beyond the mere provisioning of ICT-related services as a subset of international firms (i.e., call centers). It must pay more attention to leveraging the human side of structural capital by rewarding knowledge trainers and workers, bringing in experts to interact with current associations, and working to create a national Grenadian or even Caribbean marketplace by leveraging ICTs for market entry into the U.S. and Europe. Efforts to expand ICTs in the schools needs to be predicated on curricula that will support the National ICT Plan.

Education and training are needed to produce ICT specialists who can then promote economic growth within a country, but another reason to promote the use of ICTs is that of growing democratic values within a society. Communication technologies, in general, have served to strengthen civil society. The Internet, as a medium, overcomes the communicative barriers of time and space, and its openness promotes increasing levels of democracy. Democracy requires greater communication among government, civil society, and the people. "The countries that made a great leap into democracy recently might be expected to slip back somewhat unless or until their communication capabilities come on par with the communication

[16] Nicholas Negroponte, *Being Digital*, New York: Alfred A. Knopf, 1995, p. 238.

needs that are associated with their new levels of democracy."[17] Improved, lower cost access needs to be provided to all segments of Grenada's society so that their interconnectivity increases their sense of participation in the public discourse. Pilots like rural telecenters can be introduced to weave the Internet into the social fabric.

Identified Areas for Further Pursuit

The following are a few "People" issues where additional attention is warranted and where donor assistance could make a substantial difference in helping boost the widespread deployment and utilization of ICTs in Grenada:

A. Improve ICT support to Secondary Schools—It is essential that ICT support for the maintenance and operation of the computer labs in the secondary schools be addressed as soon as possible. The reliance on school faculty to troubleshoot/fix/repair the PCs/networks/Internet access is simply not sustainable. Moreover, teachers tend to suffer "burn out" and either move to another position or enter the ICT field and abandon teaching altogether. Possibilities worth exploring include seeking support from the U.S. Peace Corps and Canada's Global Net Corps. Under Canada's innovative program, local youth are trained to provide ICT-related support and, in return, commit to providing in-country support in the form of community service for 6-9 months. Similar to the U.S. Peace Corps, a small stipend is provided while they are in the program. This approach has the advantage of providing needed on-the-job skills to the individual and community, while also providing the student an opportunity to gain workplace acumen and skills/knowledge for employment after they leave the program.

B. Shared Distance Education Facility—There appears to be a collective demand for video streaming course content to educational facilities. The demand is such that there may also be an opportunity to share in a hub/teleport facility on the island. This would allow for a shared facility to receive broadband and then connect to the actual delivery point via terrestrial microwave. The purpose of pursuing this alternative would be to improve the availability and quality of education in Grenada and expand capacity at a number of educational institutions, including UWI and St. George's University. [Note: this recommendation is also made in the "Pipes" section of this report.]

C. UWI Computer Science Offering—With the region's increased focus on leveraging ICTs for economic development and UWI being the regional provider of an array of educational offerings (with some courses offered via distance learning), consideration should be given to expanding UWI's current offerings to include its degreed Computer Science program via distance education. This will likely require the above-mentioned telecommunications expansion (in some form—shared or at UWI in Grenada), some remodeling for additional classroom space, and some PCs/networking to support the program. However, it is essential that as the region builds its reliance on ICTs, that Grenada focuses on expanding the requisite ICT skills/knowledge base in the workforce.

[17] Christopher R. Kedzie, *The Third Waves*, in *Borders in Cyberspace*, Brian Kain and Charles Nesson, eds, Cambridge, Massachusetts: The MIT Press, 1998, p. 125.

Every effort should be made to link this program to the planned Associate Degree likely to come out of the T.A. Marryshow Community College.

Appendix A – Digital Economy 2000

On June 5, 2000, the U.S. Department of Commerce (DOC) issued its third annual report on the information technology revolution and its impact on the U.S. economy, titled "Digital Economy 2000."[18] This series of reports has been critical to providing a more comprehensive understanding on the direct and indirect role/impact of the information technology (IT) sector within the U.S. In introducing the report, then-Vice President Gore presented several key highlights from the report:

- IT accounts for half or more of the gains in U.S. productivity since 1995. The U.S. enjoyed a 2.8 percent productivity growth from 1995 to 1999--double the 1.4 percent rate of 1973 to 1995. Improved productivity has lowered inflation and raised real wages.

- IT is lowering inflation. Falling IT prices have directly pulled down overall average inflation by 0.5 percentage points a year. In addition, by raising productivity, IT lowered inflation of other industry sectors.

- The IT sector is rapidly creating jobs at high wages. IT jobs average $58,000 a year, 85 percent higher than the average for the private sector. Between 1994 and 1998, employment in IT industries expanded by 30 percent, from 4.0 million to 5.2 million jobs. IT occupations that pay the best and require the most education have been growing most rapidly.

  Former Secretary of Commerce, William M. Daly, writes in the Report's preface:

  > *"What we can see clearly are expanding opportunities. To meet these opportunities, we will have to ensure a stable and conducive economic and legal environment for continuing innovation in information technology and e-commerce. We need to encourage the building of a broadband infrastructure that allows all Americans to have access to the advanced services that support the Internet, and take the steps necessary with respect to privacy, consumer protection, security, reliability, and intellectual property rights that will inspire confidence in the Internet. To realize the full potential of this digital economy, every person and every business must be able to participate fully and make their own unique contribution to its development."*

The Executive Summary of the Report provides a strong message regarding the impact of ICTs on the U.S. economy. In addition to the above highlights, these include:

[18] *Digital Economy 2000*, U.S. Department of Commerce, http://www.esa.doc.gov/de2k2.htm.

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- The Internet in particular is helping to level the playing field among large and small firms in business-to-business e-commerce.

- There is growing evidence that firms are moving their supply networks and sales channels online and participating in the new online marketplaces.

- Advances in information technologies and the spread of the Internet are also providing significant benefits to individuals.

- The vitality of the digital economy is grounded in the IT-producing industries--the firms that supply the goods and services that support IT-enabled business processes, the Internet, and e-commerce.

- Although IT industries still account for a relatively small share of the economy's total output--an estimated 8.3 percent in 2000--they contributed nearly a third of real U.S. economic growth between 1995 and 1999.

- IT industries have also been a major source of new R&D investments.

- New investments in IT are helping to generate higher rates of U.S. labor productivity growth.

- Growth in the IT workforce accelerated in the mid-1990s, with the most rapid increases coming in industries and job categories associated with the development and use of IT applications.

- Analysis of the computer and communications industries in particular suggest that the pace of technological innovation and rapidly falling prices should continue well into the future.

- Businesses outside the IT sector almost daily announce IT-based organizational and operating changes that reflect their solid confidence in the benefit of further substantial investments in IT goods and services.

While the above reflects dynamics taking place in the U.S. economy relative to the ICT sector and its broader impact on the economy, it also reflects the potential value of ICTs in other economies--including developing and transitioning economies. This is of specific relevance the OECS/ECTEL countries as they seek to grow their economies, not so much by their reliance on traditional agricultural and tourism base, but by expanding their reliance on ICTs for growing their service, information, and knowledge-based sectors.

Appendix B – 1999 ITU Statistics

Each year, the International Telecommunications Union (ITU) publishes a *World Telecommunications Development Report*[19] that provides statistical data for all countries. Its March 2001 report included an expanded set of data that, for the first time, included data on mobile cellular. In addition to this worldwide report, the ITU periodically publishes regional-specific reports with more detailed discussions on a given geographical region. In April 2000, an *Americas Telecommunications Indicators 2000* report was published.[20]

The ITU-compiled data serves as rich resource material for understanding the dynamics taking place in telecommunications. While there are several acknowledged weaknesses in the reports (such as timing, accuracy, and incompleteness), they are still the best set of normalized data whereby trends can be identified and macro-level regional/country comparisons made.

For purposes of this ICT Assessment, selective 1999 data (the most recent available from the ITU) has been extracted from the *World Telecommunications Development Report 2000-2001* for the ECTEL countries and a few other Caribbean Islands (Barbados, Jamaica, and Trinidad/Tobago), along with selected income-level data. Combined, this data provides a quick snapshot of the current telecommunications situation in the ECTEL countries, including Grenada.

The following tables provide more details of the situation in Grenada. Following each table are keynotes clarifying some of the data on the tables, as well as short comments with respect to what one may conclude from the data.

[19] *World Telecommunications Development Report 2000-2001-- World Telecommunications Indicators*, ITU, Geneva, March 2001.
[20] *Americas Telecommunications Indicators 2000*, ITU, Geneva, April 2000.

Basic Indicators

Country	Population - 1999		GDP – 1998		Main Phone Lines	
	Total (Millions)	Density (per km)	Total (US$ B)	Per Capita (US$)	Totals (000s)	Teledensity (per 100)
ECTEL Countries						
Dominica (U-M)	0.08	102	0.3	3,391	21.3	27.88
Grenada (U-M)	0.09	271	0.3	3,635	29.4	31.51
St. Kitts/Nevis (U-M)	0.04	148	0.3	6,840	20.1	51.76
St. Lucia (U-M)	0.15	250	0.6	3,815	44.5	28.93
St. Vincent/Gr (L-M)	0.11	291	0.3	2,395	23.6	20.88
Barbados (U-M)	0.27	626	2.3	8,731	115.0	42.71
Jamaica (L-M)	2.56	224	6.9	2,707	509.6	19.91
Trinidad/Tobago (U-M)	1.29	252	6.1	4,726	278.9	21.58
Lower-Middle Income Total/Avg.	861.83	24	1,341.0	1,621	103,294.4	11.99
Upper-Middle Income Tot/Avg.	634.96	27	2,945.1	4,705	126,649.4	19.95
High Income Tot/Avg.	891.52	26	23,263.6	26,288	521,516.1	58.50
Americas Tot/Avg.	814.62	20	11,413.4	14,207	271,006.1	33.27
WORLD	5,980.91	44	29,686.5	5,111	906,713.6	15.16

NOTES:

1. Calculations for GDP vary considerably based on source and calculations used. Here, GDP figures are presented utilizing ITU's methodology and normalized across all countries in a consistent manner.
2. Teledensity is the number of phones per 100 inhabitants.

Observations:

- The populations of the ECTEL islands are small (typically less than 100,000), but relatively concentrated (with between 100 to nearly 300 people per square kilometer), due to the small size of the islands; Grenada has 271 people per square kilometer.
- The economies of the ECTEL islands are relatively small (between US$300-600 million annual GDP), but on a per capita basis, they are relatively high (between US$2,400-6,000 per capita GDP), placing most ECTEL countries in what is considered the Upper-Middle income band. Grenada's GDP is US$300 million with US$3,635 GDP per capita.
- Relative to the world average for Upper-Middle income countries, the ECTEL countries have a higher than average teledensity (ranging from 28-52 whereas the average is 20); Grenada's teledensity is 31.51. St. Vincent/Grenadines is a Lower-Middle income country, but here too, it is above the average of similar countries (teledensity of 21 versus an average of 12).

Main Telephone Lines

Country	Main Telephone Lines			Teledensity		
	1995 (000)	1999 (000)	CAGR % 1995-1999	1995	1999	CAGR % 1995-1999
ECTEL Countries						
Dominica (U-M)	17.8	21.3	4.6	24.13	27.88	3.7
Grenada (U-M)	23.2	29.4	6.1	26.02	31.51	4.9
St. Kitts/Nevis (U-M)	14.4	20.1	8.6	36.32	51.76	9.3
St. Lucia (U-M)	30.6	44.5	9.8	21.02	28.93	8.3
St. Vincent/Gr (L-M)	18.2	23.6	6.7	16.46	20.88	6.1
Barbados (U-M)	90.1	115.0	6.3	34.53	42.71	5.5
Jamaica (L-M)	291.8	509.6	15.0	11.67	19.91	14.3
Trinidad/Tobago (U-M)	209.3	278.9	7.4	16.78	21.58	6.5
Lower-Middle Income Total/Avg.	76,081.5	103,294.4	7.9	9.94	11.99	6.7
Upper-Middle Income Tot/Avg.	89,505.5	126,649.6	9.1	14.90	19.95	7.6
High Income Tot/Avg.	460,053.5	521,516.1	3.2	52.81	58.50	2.6
Americas	221,402.5	271,006.1	5.2	28.71	33.27	3.7
WORLD	691,601.0	906,713.6	7.0	12.15	15.16	5.7

NOTES:

1. CAGR = Compound Annual Growth Rate

Observations:

- With the exception of St. Kitts/Nevis and St. Lucia, growth in main lines and teledensity between 1995 and 1999 is less than the world averages for similar income level countries; Grenada's compound annual growth rate (CAGR) in main lines was 6.1 percent compared to 9.1 percent for Upper-Middle income countries, but close to the world average CAGR of 7.0 percent.

Local Telephone Network

Country	Main Telephone Lines - 1999				Faults per 100 Main Lines/year 1999
	Capacity Used (%)	Automatic	Digital (%)	Residential (%)	
ECTEL Countries					
Dominica (U-M)	61.1	100.0	100.0	85.0	9.0
Grenada (U-M)	83.0	100.0	100.0	81.0	1.1
St. Kitts/Nevis (U-M)	---	100.0	100.0	77.0	---
St. Lucia (U-M)	---	100.0	100.0	76.0	---
St. Vincent/Gr (L-M)	61.6	100.0	100.0	78.0	9.4
Barbados (U-M)	---	100.0	100.0	67.0	---
Jamaica (L-M)	---	100.0	100.0	---	---
Trinidad/Tobago (U-M)	72.1	100.0	100.0	82.3	75.0
Lower-Middle Income Total/Avg.	82.5	99.2	51.7	79.0	31.9
Upper-Middle Income Tot/Avg.	84.4	99.5	84.2	75.3	19.8
High Income Tot/Avg.	89.5	100.0	95.9	69.6	10.6
Americas	87.8	99.8	91.9	67.8	14.1
WORLD	81.4	99.8	89.6	73.1	24.8

NOTES:

Observations:

- Used switching capacity across all the ECTEL countries is 61-83 percent (Grenada is 83 percent). The world average is 81.4 percent and the average for Upper-Middle income countries is 84.4 percent. Dominica and St. Vincent/Grenadines fall significantly below this rate, with only about 61 percent of switching capacity used.
- All the switching capacity for the main telephone lines is 100 percent automatic and digital.
- The percentage of main telephone lines that are residential is higher than countries with comparable income levels (76-85 percent versus an average of 75 percent for Upper-Middle income countries). Eighty-one percent of Grenada's lines are residential.
- While the data is not available for all ECTEL countries, the faults per 100 main lines appears significantly less than other Lower-Middle and Upper-Middle income countries (no doubt due in part to digital switching and a more concentrated user base). Grenada has only 1.1 faults per 100 main lines per year, compared to an average of 19.8 for Upper-Middle income countries.

Teleaccessibility – 1999

Country	Residential Main Lines		Public Telephones		
	Total (000s)	Per 100 Households	Total (000s)	Per 1000 Inhabitants	As % of Main lines
ECTEL Countries					
Dominica (U-M)	15.9	77.5	0.31	4.20	1.67
Grenada (U-M)	23.8	76.9	0.20	2.17	0.69
St. Kitts/Nevis (U-M)	12.0	>100.0	0.17	4.23	1.07
St. Lucia (U-M)	30.7	69.7	0.42	2.88	1.26
St. Vincent/Gr (L-M)	18.4	73.7	0.21	1.87	0.90
Barbados (U-M)	77.0	81.1	0.87	2.13	0.50
Jamaica (L-M)	---	---	2.07	0.82	0.59
Trinidad/Tobago (U-M)	229.5	66.5	2.15	1.66	0.77
Lower-Middle Income Total/Avg.	76,538.6	38.3	943.04	1.15	0.93
Upper-Middle Income Tot/Avg.	93,147.3	58.5	2,662.24	4.22	2.13
High Income Tot/Avg.	348,714.4	106.1	4,282.43	4.85	0.83
Americas	182,027.6	78.5	3,644.01	4.54	1.35
WORLD	618,042.5	51.2	11,577.02	2.02	1.31

Observations:

- The percentage of households with phones throughout the ECTEL countries is considerably higher than the world averages for the Lower-Middle and Upper-Middle income countries (70->100 percent compared to 38-58 percent; Grenada has 76.9 percent residential main lines per 100 households).
- The ECTEL countries' number of public telephones per 1000 inhabitants is quite close to the world average for their respective income level, however, as a percentage of main telephone lines, they are somewhat lower than the world average (likely due to the high level of phone lines that exist in households). Grenada has 2.17 public telephones per 1000 inhabitants compared to an Upper-Middle income average of 4.22.

Largest City Main Lines – 1999

Country	Largest City				Rest Of Country	Overall Country Teledensity
	Population as % of Total	Main Lines		Teledensity		
		(000s)	% of Total			
ECTEL Countries						
Dominica (U-M)	13.5	7.4	39.5	82.22	17.37	25.23
Grenada (U-M)	21.4	10.7	36.2	53.30	25.58	31.51
St. Kitts/Nevis (U-M)	54.2	---	---	---	---	---
St. Lucia (U-M)	35.2	---	---	---	---	---
St. Vincent/Gr (L-M)	14.3	4.3	18.0	26.28	19.98	20.88
Barbados (U-M)	43.0	---	---	---	---	---
Jamaica (L-M)	29.7	---	---	---	---	---
Trinidad/Tobago (U-M)	26.0	6.27.2	24.1	19.95	22.15	21.58
Lower-Middle Income Total/Avg.	13.2	26,618.2	27.3	25.06	9.17	11.71
Upper-Middle Income Tot/Avg.	16.0	27,558.3	24.9	27.87	16.15	18.04
High Income Tot/Avg.	10.4	29,676.1	15.2	60.97	52.23	53.40
Americas	13.4	17,537.8	33.1	20.01	9.29	11.29
WORLD	7.8	96,758.1	18.1	24.56	9.00	10.16

NOTES:

Observations:

- With the exception of Dominica and St. Vincent/Grenadines, the percentage of the population of the ECTEL countries living in the largest city is considerably higher than comparable income level countries, but likely consistent with small island nations.
- Teledensity of the largest ECTEL cities appears to be quite high (53-82 compared to 28 for Upper-Middle income countries) but, again, this is likely due to the nature of island nations. However, some data is missing for several of the islands. Grenada's largest city teledensity is 53.3 compared to an average of 27.87 for Upper-Middle income countries.
- There is a significant disparity between the teledensity of the largest city and the rest of the country (e.g., for Dominica, the largest city which contains only 13.5 percent of country's population has a teledensity of 82.22, whereas the rest of the country has a teledensity of 17.37). This is an extreme situation, but reflects the disparity, even though in most cases this is not as exaggerated. Grenada's teledensity for its largest city is 53.3 compared to an overall country teledensity of 31.51.

Telephone Tariffs - 1999

Country	Residential (US$)		Business (US$)		Local Calls US$	% GDP per Capita
	Connection	Monthly Subscription	Connection	Monthly Subscription		
ECTEL Countries						
Dominica (U-M)	20	2.7	20	7.5	---	1.0
Grenada (U-M)	85	14.1	85	40.7	---	4.6
St. Kitts/Nevis (U-M)	2	3.0	27	3.7	0.02	0.6
St. Lucia (U-M)	---	---	---	---	---	---
St. Vincent/Gr (L-M)	37	6.3	37	14.8	0.09	3.2
Barbados (U-M)	49	15.5	49	42.4	---	2.1
Jamaica (L-M)	16	2.7	23	5.8	0.06	1.5
Trinidad/Tobago (U-M)	11	4.6	22	27.8	0.04	1.2
Lower-Middle Income Total/Avg.	107	4.0	163	7.6	0.05	3.5
Upper-Middle Income Tot/Avg.	82	8.1	129	15.6	0.07	1.8
High Income Tot/Avg.	106	11.5	116	16.6	0.10	0.7
Americas	100	7.9	134	16.3	0.06	3.3
WORLD	94	6.5	128	10.4	0.08	5.6

NOTES:

- The **% GDP per capita** column is the subscription cost as a percentage of GDP per capita and is calculated based on 1998 GDP and population data.

Observations:

- Connection rates for linking up telephone service are typically less in ECTEL countries than in countries with similar income levels (for both residential and businesses). For Grenada, the costs are close to the world average for Upper-Middle income countries (US$85 for both residential and business compared to an average of US$82 and US$129).
- Monthly subscription costs for Grenada are considerably higher than the average for Upper-Middle income countries (for residential, US$14.10 compared to US$8.10; and for business, US$40.70 compared to US$15.60). It should be noted that this is 1999 data, and rates have since been reduced.
- Grenada's Telephone Tariffs as a percentage of GDP are very high compared to other Upper-Middle income countries (4.6 percent compared to an average of 1.8 percent).

Cellular Subscribers

Country	Cellular Mobile Subscribers					As % of Total Telephone
	Subscribers (000s)		CAGR % 1995-1999	Teledensity 1999	% Digital 1999	
	1995	1999				
ECTEL Countries						
Dominica (U-M)	---	0.7	---	0.86	100.0	3.1
Grenada (U-M)	0.4	2.0	49.8	2.15	---	6.4
St. Kitts/Nevis (U-M)	---	0.7	---	1.81	---	3.4
St. Lucia (U-M)	1.0	1.9	23.9	1.25	---	4.5
St. Vincent/Gr (L-M)	0.2	1.4	60.3	1.25	7.0	5.7
Barbados (U-M)	4.6	30.0	59.7	11.14	90.0	20.7
Jamaica (L-M)	45.2	144.4	33.7	5.64	---	22.1
Trinidad/Tobago (U-M)	6.4	38.7	57.1	2.99	---	12.2
Lower-Middle Income Total/Avg.	2,719.3	19,670.2	64.0	2.28	25.6	16.0
Upper-Middle Income Tot/Avg.	7,526.5	85,097.6	83.4	13.4	66.1	40.2
High Income Tot/Avg.	76,404.0	36,904.8	44.9	37.79	70.6	39.2
Americas	40,257.2	135,128.8	35.3	16.59	10.8	33.3
WORLD	90,719.8	491,342.5	52.6	8.22	70.2	35.2

Observations:

- Cellular/Mobile data for ECTEL countries is sketchy and, therefore, its use is limited for drawing conclusions.
- It is clear that the entry of Cellular/Mobil has been late in coming to the ECTEL countries, and that, across the board, the growth rate between 1995 and 1999 has been considerably less than the growth in countries of similar income levels (24-60 percent on a very small base, whereas the average growth rate for the Upper-Middle income level is nearly 85 percent for this same period). Grenada's compound annual growth rate for 1995-1999 was 49.8 percent.
- Teledensity of Cellular/Mobile as of 1999 is considerably less than countries with comparable income levels (teledensity of Cellular/Mobil of ECTEL being between 1 and 2 whereas the average for Lower-Middle is over 2, and for Upper-Middle income countries it is over 13). Grenada's teledensity of Cellular/Mobile subscribers is 2.15.
- Cellular/Mobile as a percentage of the total teledensity is considerably less than averages for comparable countries (3-6.5 percent compared to 16-40 percent). This is due to a late start, but also likely influenced to some degree by the relatively high main line telephone teledensity. The total teledensity for Cellular/Mobile subscribers in Grenada is 6.4 percent.

International Telephone Traffic – 1999

Country	Outgoing Telephone Traffic					International Circuits (000)
	Million Minutes		CAGR % 1995-1999	Minutes Per Inhabitant	Minutes Per Subscriber	
	1995	1999				
ECTEL Countries						
Dominica (U-M)	7.5	7.3	-0.8	94.8	340.1	0.4
Grenada (U-M)	7.8	10.3	7.4	110.5	350.7	0.6
St. Kitts/Nevis (U-M)	8.0	13.1	12.9	337.3	651.7	---
St. Lucia (U-M)	12.7	13.4	1.9	88.3	332.5	---
St. Vincent/Gr (L-M)	---	11.6	---	102.5	491.1	0.4
Barbados (U-M)	32.0	45.0	8.9	167.1	391.3	---
Jamaica (L-M)	62.0	70.1	3.1	27.4	137.5	---
Trinidad/Tobago (U-M)	58.6	67.8	3.7	53.5	243.2	1.9
Lower-Middle Income Total/Avg.	4,149.4	5,558.2	7.2	6.6	54.2	141.0
Upper-Middle Income Tot/Avg.	6,313.3	10,005.1	12.1	15.8	79.0	150.5
High Income Tot/Avg.	50,164.3	81.451.7	12.9	91.4	156.3	599.3
Americas	22,343.8	39,319.9	15.1	48.3	145.1	256.0
WORLD	63,416.6	100,805.4	12.2	17.2	111.4	1,014.8

NOTES:

Observations:

- The outgoing international traffic from the ECTEL islands on a per inhabitant basis is completely "off the charts" relative to comparable income level countries (88-333 minutes per inhabitant for ECTEL countries compared to an average for Upper-Middle income countries of 16). Grenada's outgoing international minutes per inhabitant is 110.5.
- On a per subscriber basis, this comparison is equally significant (333-652 minutes compared to 79 minutes for Upper-Middle income countries). Grenada has 350.7 outgoing international minutes per subscriber.
- These disparities are most likely due to the nature of a tourist-based economy, but are also likely to be partially due to island Diaspora and family members living in the U.S., U.K., and Canada.
- The extremely high outgoing international traffic is a real "cash cow" for the incumbent telecommunications provider and will require serious attention during market liberalization.

Telecommunications Staff – 1999

Country	Telecommunications Staff (000s)		CAGR % 1995-1999	Main Lines per Employee		
	1995	1999		1995	1999	CAGR % 1995-99
ECTEL Countries						
Dominica (U-M)	0.2	0.2	-7.2	81	130	12.7
Grenada (U-M)	0.3	0.3	-0.3	85	109	6.4
St. Kitts/Nevis (U-M)	0.2	0.2	-5.0	70	119	14.3
St. Lucia (U-M)	0.4	0.4	-0.9	79	107	10.7
St. Vincent/Gr (L-M)	0.2	0.2	-5.7	87	142	13.2
Barbados (U-M)	1.0	1.1	2.2	90	105	4.0
Jamaica (L-M)	4.3	3.2	-7.4	67	160	24.1
Trinidad/Tobago (U-M)	2.7	2.8	0.4	77	100	7.0
Lower-Middle Income Total/Avg.	1,112.1	1,114.7	0.1	68	92	7.9
Upper-Middle Income Tot/Avg.	642.9	700.9	2.2	139	179	6.5
High Income Tot/Avg.	2,359.5	2,550.5	2.0	195	2.4	1.2
Americas	1,316.9	1,574.1	4.6	168	172	0.6
WORLD	5,357.4	5,843.3	2.2	129	154	4.7

NOTES:

Observations:

- Across the ECTEL countries, it is quite clear that between 1995 to 1999, the current telecommunications provider (C&W) has been undergoing cost-reduction efforts, including dropping staff (0.3 – 7.2 reduction in staffing for this period).
- The number of main lines per telecommunications employee has naturally grown over this same period, but for the Upper-Middle income countries, ECTEL countries are still considerably below the world averages (107-130 lines per employee compared to an average of 179 for Upper-Middle income countries and a world average of 154). For St. Vincent/Grenadines, the comparison is favorable (142 compared to an average for Lower-Middle income countries of 92). Grenada has 109 main lines per employee.

Telecommunications Revenue

Country	Telecommunication Revenue – 1999				
	Total (M US$)	Per Inhabitant (US$)	Per Main Line (US$)	Per Employee (US$)	As a % of GDP
ECTEL Countries					
Dominica (U-M)	13.4	175.0	628	81,650	5.1
Grenada (U-M)	---	---	---	---	---
St. Kitts/Nevis (U-M)	27.8	712.6	1,512	168,350	10.4
St. Lucia (U-M)	---	---	---	---	---
St. Vincent/Gr (L-M)	24.8	219.3	1,050	149,487	9.0
Barbados (U-M)	191.9	712.6	1,669	174,453	8.1
Jamaica (L-M)	462.6	180.7	908	145,066	6.6
Trinidad/Tobago (U-M)	226.9	175.6	814	81,679	3.1
Lower-Middle Income Total/Avg.	25,590.9	31.1	256	23,030	2.1
Upper-Middle Income Tot/Avg.	92,6045	145.9	733	138,086	2.9
High Income Tot/Avg.	682,740.4	766.1	1,310	268,690	2.7
Americas	344,154.7	427.8	1,276	220,233	2.8
WORLD	841,921.1	144.5	934	147,222	2.6

NOTES:

Observations:

- While information is sketchy for the ECTEL countries, on a per inhabitant basis, telecommunications revenue is considerably higher than the average for similar income countries (US$219 compared to US$31 for Lower-Middle income and US$175-713 compared to US$146 for Upper-Middle income countries).
- There is also considerably higher revenue for the ECTEL countries on a per line basis as well as a per employee basis (US$628-1,512 compared to US$733 for Upper-Middle income countries and US$256 for Lower-Middle income countries).
- Telecommunications revenue as a percentage of GDP is also very high for the ECTEL countries (5.1-10.4 percent compared to an average of 2.1 percent for Lower-Middle and 2.9 percent for Upper-Middle income countries).

Telecommunications Investment

Country	Telecommunication Investment – 1999				
	Total (M US$)	Per Inhabitant (US$)	Per Main Line (US$)	As % of Revenue	As a % of GFCF
ECTEL Countries					
Dominica (U-M)	---	---	---	---	---
Grenada (U-M)	---	---	---	---	---
St. Kitts/Nevis (U-M)	3.1	79.5	200	12.6	4.8
St. Lucia (U-M)	---	---	---	---	---
St. Vincent/Gr (L-M)	4.1	36.0	172	16.4	5.5
Barbados (U-M)	28.1	104.3	244	14.6	5.5
Jamaica (L-M)	135.8	53.0	266	29.4	6.6
Trinidad/Tobago (U-M)	69.7	54.3	264	32.8	4.5
Lower-Middle Income Total/Avg.	7,557.5	9.5	77	30.3	3.0
Upper-Middle Income Tot/Avg.	28,087.5	46.0	229	32.1	4.8
High Income Tot/Avg.	127,612.9	143.4	245	18.7	2.5
Americas	47,807.6	61.0	178	14.0	5.1
WORLD	188,486.6	33.0	210	22.6	2.9

NOTES:

- GFCF = Gross Fixed Capital Formation

Observations:

- The ITU report does not provide sufficient information on the ECTEL countries to detect much in the way of telecommunications investments other than to say it appears to be within the averages relative to population, but lower than average relative to telecommunications revenue.

Information Technology

Country	Internet – 1999				Estimated PCs	
	Hosts		Users		Total (000)	Per 100 Pop
	Total	Per 10K Pop	Total	Per 10K Pop		
ECTEL Countries						
Dominica (U-M)	181	23.66	2.0	261.44	5	6.54
Grenada (U-M)	3	0.32	2.5	267.70	11	11.78
St. Kitts/Nevis (U-M)	8	2.06	2.0	516.10	6	15.48
St. Lucia (U-M)	13	0.85	3.0	195.18	21	13.66
St. Vincent/Gr (L-M)	---	---	3.0	265.09	11	9.72
Barbados (U-M)	68	2.53	6.0	222.82	21	7.80
Jamaica (L-M)	367	1.43	60.0	234.35	110	4.30
Trinidad/Tobago (U-M)	4,852	37.54	30.0	232.14	70	5.42
Lower-Middle Income Total/Avg.	376,585	4.28	6,593.6	78.84	19,516	2.57
Upper-Middle Income Tot/Avg.	2,347,283	36.97	29,297.5	461.50	36,291	5.80
High Income Tot/Avg.	69,150,849	775.65	186,099.3	2,088.05	309,641	34.80
Americas	56,005,148	687.50	94,407.6	1,158,92	170,532	21.50
WORLD	72,005,852	120.46	235,449.42	398.44	389,890	6.84

NOTES:

Observations:

- Overall, the number of Internet hosts in the ECTEL countries is considerably below the averages for similar income countries. Dominica, while still under the average, is at least close (excluding Dominica, the range is .3-2 hosts per 10,000 population whereas the average for Upper-Middle income countries is 37; Dominica is 24). Grenada has .32 hosts per 10,000 population.
- The number of Internet users in 1999 is very low, with 2,000-3,000 per country. The number of Internet users per 10,000 population ranges between 195-516 in ECTEL countries compared to the average for Upper-Middle income countries of 461; Grenada has 268 users per 10,000 population.
- There is a high percentage of PCs per 100 population compared to other countries of similar income levels (6.5-15.5 per 100 population compared to 2.6 for Lower-Middle and 5.8 for Upper-Middle income countries). Grenada has 12 PCs per 100 population.
- The relatively high availability of PCs and the comparatively low use of the Internet is likely a direct result of limited access and costs (but mostly costs, since there are a high number of main lines per household across the ECTEL countries).

Network Growth

Country	New Telephone Lines Added (1998-1999)		New Mobil Subscribers Added (1998-1999)		New Internet Hosts Added (1998-1999)	
	Total (000)	CAGR %	Total (000)	CAGR %	Total (000)	CAGR %
ECTEL Countries						
Dominica (U-M)	1.3	6.3	---	---	---	22.3
Grenada (U-M)	1.9	7.1	0.6	42.7	35.8	41.4
St. Kitts/Nevis (U-M)	1.7	9.2	0.3	59.1	---	60.0
St. Lucia (U-M)	4.1	10.1	---	---	---	-43.5
St. Vincent/Gr (L-M)	2.6	12.3	0.7	89.3	---	---
Barbados (U-M)	2.0	1.7	18.0	150.0	---	54.5
Jamaica (L-M)	39.3	8.4	65.8	83.6	---	14.0
Trinidad/Tobago (U-M)	14.8	5.6	12.4	47.0	2.9	147.6
Lower-Middle Income Total/Avg.	6,729.7	7.0	8,453.7	75.6	17.4	5.0
Upper-Middle Income Tot/Avg.	10,883.9	9.4	39,033.5	84.9	1,078.1	84.9
High Income Tot/Avg.	13,213.6	2.6	102,211.4	43.6	27,283.8	65.2
Americas	11,686.4	4.5	38,894.7	40.5	23,905.9	74.5
WORLD	58,626.8	6.9	172,045.8	53.9	28,460.4	65.4

NOTES:

Observations:

- Growth in the number of main lines taking place between 1998-1999 in the ECTEL countries is close to the averages for similar income countries, with Dominica and Grenada being slightly less (Dominica's compound annual growth rate (CAGR) is 6.3, and Grenada's is 7.1; the average for Upper-Middle income countries is 9.4).
- With the exception of St. Vincent/Grenadines, the growth in Cellular/Mobile for ECTEL countries is well below the growth rates for countries with comparable income levels (43-60 percent compared to 85 percent for Upper-Middle income countries; St. Vincent/Grenadines had an 89 percent growth in 1999 and Grenada's growth rate was 42.7 percent).
- Growth in Internet hosts throughout the ECTEL countries is also well below comparable averages, but data is insufficient to make any additional observations.

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